0024240

CORRES. CONTROL
OUTGOING LTR. NO.

89 RF 2007

DIST.	LTR	ENCL
SANCHINI, D.J.	X	X
BADER, C.P.		
ERFURDT, R.J.		
HEINTZ, E.R.		
HOOD, R.C.		
IDEKER, E.H.		
KINZER, J.E.		
KIRBY, W.A.		
McNETT, J.F.		
MEYERS, G.W.		
ROECKER, J.H.		
SHANNON, W.M.		
WESTON, W.F.	X	X
WOZNIAK, B.D.		
YOUNG, E.R.		
BETCHER, D.H.		
CARNIVAL, G.J.		
FERRERA, D.W.		
HARMAN, L.K.		
HEBERT, J.L.		
HOEY, J.B.		
HOFFMAN, R.B.		
KLAMANN, R.L.		
KRIEG, D.M.		
LOUDENBURG, G.E.		
McKINLEY, K.B.	X	X
NAIMON, E.R.	X	X
NEWBY, R.L.		
TURNER, H.L.		
VELASQUEZ, R.N.		
Ficklin, A.C.	X	X
CORRES. CONTROL	X	X
CONTRACT ADMIN.		

CLASSIFICATION
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DATE
IN REPLY TO LTR. NO.

DEC #
LTR APPROVALS

ORIG. & TYPIST INITIALS

RF-46469 (Rev. 4/89))

ACF: evk

Rocky Flats Plant
North American Space Operations
Rockwell International Corporation
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Contractor to U.S. Department of Energy

Rockwell International

000025439

JUL 1 8 1989

89-RF-2007

Edward S. Goldberg
Acting Area Manager, RFO

TRANSURANIC WASTE MANAGEMENT PLAN

In earlier correspondence (March 1989) we informed your office of our approach for shipping only ATMX railcars containing 4'X4'X7' boxes of transuranic (TRU) waste during the limited permit for shipments to Idaho. We have been adhering totally to that approach.

We also provided projections of on-hand waste volumes during and after the shipment period. Projections were based on a generation rate of 150 cubic yards per month, which has proven to be a very conservative estimate to date. It still appears that the total permitted storage capacity of 1601 cubic yards will not be reached until sometime after December 1, 1989.

Much of the reduced generation rate is attributable to ongoing waste minimization activities, which include improved assaying and segregation techniques; increased generator awareness, training, and concern; utilization of the Advanced Size Reduction Facility (ASRF); and reduced activity in the size reduction vault.

The attached Plan is a program plan to address TRU waste storage and shipments over the next year. We have assigned Ann Ficklin of Waste Operations to be the full time Program Manager for this important activity. If there are questions on the plan, please contact Ann at extension 4293 or Ed Naimon at extension 7900.

Dominick J. Sanchini
President

Orig. and 3 cc - E. S. Goldberg
Enc.

ADMIN RECORD

IA-A-00118

TRU WASTE MANAGEMENT PLAN

JUNE 1989

TRU WASTE MANAGEMENT PLAN

Background

Waste minimization at Rocky Flats has been an ongoing activity for many years with demonstrable successes. For transuranic (TRU) waste, the total volume generated decreased monotonically from 4,328 cubic yards in fiscal year 1984 to 2,269 cubic yards in fiscal year 1988. It is projected that total TRU generation in fiscal year 1989 will be significantly less than 1988. Most of the reductions are attributable to improved assaying and segregation techniques; increased generator awareness, training, and concern; utilization of the Advanced Size Reduction Facility (ASRF); and reduced activity in the size reduction vault.

The size reduction vault is a supplied-air operation that has historically been utilized for repackaging, sorting, and treating TRU wastes. In FY 1986, the vault was operated on a three-shift basis. Improved processing, such as elimination of filter cementation, and utilization of the ASRF for some packaging activities has enabled the vault to only be used on a one-shift basis. The goal is to totally eliminate size reduction vault operations, which are labor intensive and generate large volumes of secondary TRU waste. Significant radiation exposure reductions and fewer injuries have already been realized by reduced activities in the size reduction vault.

Recent approval by WIPP/DOE and Westinghouse personnel has been granted to certify TRU waste as directly packaged in drums, thus negating much of the need to repackage in the size reduction vault. Crushing of HEPA filters and drums is still ongoing in the vault until the TRU Waste Neutralization and Shredding Facility is available in 1990.

Current emphasis is on generator awareness, which is the primary focus of a plant-wide Drum Control Program. Elimination at the source is the key to reduction of TRU waste generation. Generators are packaging more efficiently, segregating better, consolidating bag-outs to reduce wastes, and improving compliance with procedures. Additionally, secondary volume reduction benefits are realized by those activities conducted in the ASRF.

Several major projects are ongoing in various stages of development or procurement to process TRU waste. One such project is the Supercompactor, which is estimated to reduce the total TRU waste volume shipped by 50%. Another project in the development stage is microwave melting. If successful, this could reduce the number of TRU solidified sludge drums by 60%. The supercompactor should be operational in 1990, and microwave melting at a later date.

There are other aggressive activities ongoing that will further enhance TRU waste minimization objectives. These include sorting-at-the-source (in-line assay); bagless posting (eliminates combustibles); and Kelly decontamination system (reduces combustibles).

There are several issues associated with transuranic (TRU) waste that need to be resolved within the Department of Energy (DOE) complex before Rocky Flats Plant is able to ship all backlog and current generation waste on a routine basis.

Issues and Current Status

There are several ongoing issues and concerns, as detailed below.

1. Idaho National Engineering Laboratories (INEL)

   The INEL has been authorized by the Governor of Idaho to accept only two railcars of TRU waste boxes each month until September 1, 1989. At this time RFP will have approximately 1000 cubic yards of TRU waste in inventory. Shipments after September 1, 1989 of RFP TRU waste to INEL are uncertain. For this Plan, it is assumed that all shipments will cease in September.

2. TRUPACT II

   The Safety Analysis Report for TRUPACT II was submitted to the Nuclear Regulatory Commission for review/approval on March 6, 1989. Issuance of the Certificate of Compliance is expected in July 1989. There will be a significant portion (approximately 20%) of RFP TRU waste that cannot be shipped in the TRUPACT II under the initial Certificate of Compliance.

   None of the organic sludges generated in Building 774 will meet the TRUPACT II shipping criteria due to the hydrogen generation. Rocky Flats generates approximately 300 drums/year (80 cubic yards/year) of this waste. Waste Process Development is evaluating treatment options and/or process modifications.

   There are other miscellaneous wastes that will not meet the TRUPACT II shipping criteria due to high wattage values (affecting the hydrogen generation). Approximately 860 drums/year (235 cubic yards/year) are in this category. Rocky Flats can test these wastes to get actual (instead of calculated) gas generation data. This may allow RFP to ship some waste packages in this category. Rocky Flats can also repackage the waste into partially full drums. If the packages do not have localized radioactivity, this approach will generate more drums of waste, but may also reduce the wattage values allowing RFP to ship. Waste Process Development is evaluating these wastes for treatment methods and/or waste stream modification.

   The Waste Isolation Pilot Plant (WIPP) will attempt to modify the TRUPACT II Safety Analysis Report to accommodate these problem wastes after DOE has experience operating TRUPACT II and additional gas generation test data.

   The TRUPACT II Type B container tests were completed in April 1989. The transport containers will be built at a rate of three (one trailer) every five weeks for a total of fifty (seventeen trailers) in the fleet. Rocky

Flats will need to make one shipment every other day to keep up with current generation. Depending on the turnaround at WIPP, RFP will need three to four trailers. Four trailers will be available by early September.

3. Waste Isolation Pilot Plant

The Supplement Environmental Impact Statement (SEIS) is presently being reviewed by DOE/HQ. It was submitted for public review in April 1989. The SEIS is projected to be complete by August 1989. This is the critical path item for the opening of WIPP, since the results of the public review and comment period are unknown.

There are several bills that have been proposed to Congress for Land Withdrawal. One bill includes a requirement that TRU waste cannot be sent to any other site (i.e., INEL) once WIPP opens. The intent of Land Withdrawal is to transfer the WIPP site from the Department of Interior to the Department of Energy. The DOE cannot operate WIPP until this has been completed. The Land Withdrawal will also dictate the amount of waste that can be emplaced into WIPP during the demonstration period (the first five years of operation). It is expected that the demonstration period will allow utilization of 3% of WIPP's capacity, which will accommodate 100% of RFP waste. This is not expected to impact the opening of WIPP.

The No Migration Petition has been submitted to the Environmental Protection Agency in Washington, D.C. If WIPP does not receive favorable response to the No Migration Petition, RFP will be able to ship only approximately 5% of the TRU waste generated. Only the waste that meets Land Disposal Regulations will be able to be shipped.

4. WIPP Experimental Program

The Performance Assessment and Operational Demonstration Plan was submitted to the National Academy of Sciences in April 1989. This determines the type of waste that WIPP will accept during the demonstration.

5. ATMX Railcar

The Department of Transportation exemption for the ATMX railcars expires July 1, 1989. The RFP submitted a request for extension of the System Safety Assessment (SSA) (Volume 1) on March 23, 1989. The supporting documents (Volume 2) were submitted on April 15, 1989. Once the request for exemption and the System Safety Assessment have been submitted, RFP can utilize the ATMX (under "Timely Renewal") until approval is formally granted or denied. If the exemption is denied, RFP will have no mode of transporting TRU waste until TRUPACT II is ready.

RFP TRU Waste Plan

Rocky Flats will continue shipments to INEL until September 1989. After the last shipment to INEL, RFP will have approximately 1000 cubic yards of TRU waste in inventory. The first shipment to WIPP will come from INEL. Subse-

quent shipments will come from RFP until WIPP has sufficient TRUPACT's and capacity to handle RFP and other TRU waste generators. The "official" position of WIPP is that Rocky Flats will begin shipping to WIPP in early 1990. Assuming WIPP still is granted a No Migration Petition, RFP will be able to ship all waste that meets the TRUPACT II shipping criteria. Rocky Flats Plant presently generates approximately 330 cubic yards of waste each year that does not meet the TRUPACT II shipping criteria under the initial Certificate of Compliance.

Rocky Flats Plant has a permitted capacity of 1601 cubic yards. Rocky Flats will need to make at least one shipment per day to ship backlog and current generation. At this shipping rate, it will take one year to ship the backlog and generation of TRU waste. Rockwell can store the TRU waste that does not meet the shipping criteria for approximately 4-1/2 years before reaching the permitted storage.

If the opening of WIPP is delayed, RFP will reach the permitted storage limit in approximately February 1990 (physical capacity will be reached earlier). There are ten ATMX railcars available for shipping/storing TRU waste. Six of these railcars presently accommodate the 4'X4'X7' metal boxes and four accommodate the waste drums.

Objective

The objective of the TRU Waste Management Program is to identify generation sources of TRU waste, focusing on Building 771 initially, and recommend and institute process and procedural changes that reduce this waste at the source. This reduction in TRU waste will extend the point in time when Rocky Flats reaches its TRU mixed waste storage capacity awaiting the opening of the WIPP facility. The smaller volume of TRU waste will also reduce shipment costs and extend the operating life of the WIPP facility. Environmental regulations under RCRA, DOE Orders and Rockwell Policy require the minimization of TRU mixed waste and TRU waste. This Program was also established in part as a response to DOE, RFAO request for a TRU waste generation reduction plan. This response is defined in a letter dated March 21, 1989 entitled TRANSURANIC WASTE MANAGEMENT AND SHIPMENT PLAN, D. J. Sanchini to A. E. Whiteman (Attached).

Scope

The scope of this Program encompasses the TRU waste generation sources in all plutonium buildings. The initial focus is on Building 771, which is the largest single generation point at Rocky Flats. The procedural and process changes recommended to reduce TRU waste in Plutonium Recovery Operations will be evaluated for use in other plutonium areas. This program will not address treatment that is separate from the point of generation (e.g., supercompaction of TRU waste) as these treatment programs are addressed through other reporting mechanisms and are technically considered by Regulatory Agencies and the DOE as not properly within the scope of Waste Minimization.

Status

Source Identification

Building 771

From March 1988 through December 1988, Buildings 771 and 774 (aqueous sludge) generated approximately 47% of the total plant TRU waste (Figure 1a). As expected, beginning in January 1989 the TRU waste from Building 771 decreased due to the shut down of the building. As the building started up the TRU waste generation is increasing as shown in Figure 1b:

Jan 20% of the plant total

Feb 23% of the plant total

Mar 33% of the plant total

Apr 37% of the plant total

Also, the total plant TRU waste generation has decreased during the month of March and April 1989 as compared to last year. This is shown (by number of drums) in Table I. Building 771 has reduced its generation rate of 204 drums per month to 66 drums per month. Figures 2 and 3 show the generation per week of TRU solid and sludge waste (in cubic feet) per week respectively. This reduction in Building 771 TRU waste is due to several factors, which include:

- Building 771 runs "cleaner" due to the aggressive Self-Assessment Program
- There are no ongoing stripouts or restorations
- There is "full" operation for metal production , but some areas are still not operational. For instance, Special Recovery, "low-level" residue dissolution, Sand, Slag and Crucible milling and grinding, R&D lines, and Line 3 (oxide dissolution) are not operating.

Statistical Analyses are being performed on 771 waste generation data. A correlation is being evaluated between drums of waste generated and those lines that are operating in Building 771 each week to identify primary waste generation points. The compilation of three months of data in Table II shows how much waste (cubic feet) was generated, and how many days each line was operating each week. Line 13 and 14 are the principal generation points by statistical analysis, with Line 17 the second biggest generator. Line 13 is used for "Batching" feed solution for precipitation, and Line 14 is Feed Evaporation prior to precipitation. These lines are usually operated together. Line 17, normally used for reduction of plutonium fluoride to metal, is also used for resampling old buttons with questionable purity. The amount of waste that will be generated on a weekly basis in Building 771, with all lines down, is estimated to be 25-30 cubic feet.

This analysis needs to be performed on approximately a year's worth of data before predictable trends are identified because of all the variables in the system. For example, the lines don't operate on a continuous basis, but go up and down (sometimes within a given week); drums are not always full of waste; and there is a lag time between waste generation and when the drum is assayed and designated as waste.

Individual waste packages from each line have been plotted against date of generation. The total number of packages from each line has been divided by the number of days that line has operated, giving a generation rate for each line. The results are given in Table IV. Again, because of the variables in the system, these results are preliminary and not definitive. Packages vary widely in size, and this study assumes uniform size. Also there are packages in each drum that come from area cleanup and not individual lines.

All Areas

Figures 4 through 9 show the generation of combustibles, metal and glass TRU waste (by number of drums) in the six major TRU waste generation areas for January through April 1989. Combustibles, metal and glass are being tracked because these waste forms make up 70-75% of all TRU waste. See Table V. Specific building data will be provided regularly to the Building Manager for information, tracking, goal establishment and adjustment.

Buildings 707 and 777

The generation of TRU waste is down plantwide from one year ago. The monthly average was 526 drums per month and is now 273 drums per month. However, two of the six major TRU waste generation areas have increased the rate of TRU waste generation. These are Buildings 707 and 777; both areas are (plutonium) Production Operations. The reasons for this increase include the following:

- The procedure for placing combustible waste in drums has changed. The plutonium estimator, which is used to scan each package prior to placement in a drum, gives an assay value that has a variability of $\pm$ 100%. This scan is to assure plutonium content of all drums is within nuclear criticality limits. Because of criticality infractions caused by the poor assay capability of these scanners, Production Operations has significantly reduced the amount of plutonium, and therefore waste, placed in each drum during this past year.

- There has been a significant amount of stripout work in these buildings during the past year associated with replacement of lathes, mills, furnaces, tanks, tooling, etc.

Radiation Instrumentation is working with Production Operations in evaluating new technology to replace the gram estimators now being used for package assay. New Ludlum instrumentation has been purchased and is more accurate. These new instruments will be calibrated for difference matrices (i.e., combustibles, metal, etc.). These new counters will be placed in three locations in Building 707 and one in Building 777. This should allow more material to be packaged safely in each drum, thus reducing the number of TRU waste drums generated each month. This new system will not be operational until at least November 1989.

Stripouts and major renovations scheduled during the next six to eight months which could impact TRU waste generation in Buildings 707 and 777 will be delayed.

Another suggested procedure to increase the amount of material in a drum from 707 or 777 is to split each package which is 50 grams or more of plutonium by the gram estimator. The new "cold" package is placed in a drum and the new "hot" package would be sent to the can counter where an accurate assay could be performed and the material added directly into a residue drum. However, if this procedure is used in Buildings 707 and 777, it will require additional operator time to segregate and repackage material. This procedure is currently being used in Building 771.

Building 776

The reduction in TRU waste from Building 776 is due to the virtual elimination of the supplied-air suit operations in the Size Reduction Vault.

Any quotas for Building 776 will not include the volume of stripout waste sent to the Advanced Size Reduction Facility for size reduction. These wastes will be charged against the originating building's quota.

Building 559

The reduction in TRU waste from Building 559 generated in FY89 is due to better segregation and identification of "non-line" generated waste.

Previously all drummed material from Building 559 was identified as "Line-Generated", and was therefore considered to be TRU waste once it was assayed and found to be waste. Now that non-line generated waste is marked "Non-line" generated it is verified by assay to be low level waste, thus reducing the number of TRU waste drums from Building 559 by two-thirds.

Currently all drummed material from Building 559 is labeled hazardous when it is found to be waste. Buildings 559 segregates all hazardous waste into one drum which is marked "hazardous", and located in a RCRA satellite collection station. Not marking the other TRU waste drums as hazardous will reduce the volume of TRU mixed waste by an average of 14 drums per month.

Recovery and Production Operations Stripout (D&D) Projects

Table VI shows the anticipated generation of TRU waste from stripout and renovation work in Building 771; Module C, Building 707; and Building 371 as well as the estimated start dates.

Recovery Process Equipment (RPE) will form a waste management team for review of all Recovery Operations D&D against guidelines. These guidelines will address segregation of LLW and TRU waste and mixed from radioactive waste, as well as decontamination procedures to reduce TRU and TRU mixed waste volumes and toxicity.

Information on volumes of waste to be generated from stripouts presently is provided by Facilities Engineering and Maintenance at the time of Title II review. This information will be received earlier to allow the RPE waste management team review and implementation of volume and toxicity reduction measures for all stripout work for Recovery Operations (principally Building 771).

Line 1 (north end) and Line 30 are contaminated with americium. The high gamma emissions limit the amount of segregation (i.e., lead shielding from glove-boxes) and "in-situ" size reduction possible in order to minimize radiation exposure to personnel.

Segregation

One of the most effective means identified to reduce the volume of TRU and TRU mixed waste in the short term, with a minimum of capital fund investment, is "segregation." Segregation procedures, however, increase the volume of LLW and low-level mixed waste.

The first procedural change being evaluated to reduce TRU waste is to segregate all "line-generated" combustible drums as either TRU or LLW based on an assay at the 100 nanocurie/gram level.

The procedure presently is to designate all "line-generated" waste drums as TRU. The results of counting four weeks of "line-generated" drums from Building 771 are:

Low-Level	TRU	% LLW
14	58	24%

Based on these and additional drum assay results, a determination will be made on whether or not to effect a procedural change to assay all "line-generated" combustible drums for segregation as LLW and TRU waste.

A second procedural change being evaluated is to segregate combustible waste from acid and non-acid lines in Building 771. A survey of which lines are acid and non-acid is listed in Attachment II. Drums from non-acid lines would not be TRU "mixed" waste, but TRU waste. TRU waste is not RCRA-regulated. Currently all "line-generated" combustible waste drums from Building 771 are labeled and managed as RCRA-regulated mixed waste.

In addition, the combustible waste from nitric acid lines is not a corrosive hazardous waste. Tests will be performed on this waste to determine if it is an oxidizer and therefore exhibits the characteristic of ignitability. If it doesn't, then all TRU combustible waste from Building 771 Recovery Operations is TRU waste (rather than TRU mixed) and not RCRA-regulated. Approximately 66 drums per month would be recategorized from TRU mixed to TRU waste. All necessary approvals would be obtained from RCRA Program Office, DOE, CDH and EPA before initiating this change.

Project Status

Passive Waste Sorter

Contact: Jack Blakeslee
Process Technology Development

This system will allow segregation of low-level and TRU combustible waste by the package at the point of generation (glovebox). The estimated reduction from this assay and segregation is 13%. This counter could replace the gram estimators used in plutonium processing areas. With an accurate assay, Operations could fill drums with waste with the assurance of staying within nuclear criticality safety limits. This would significantly reduce the number of waste drums generated. A prototype has been built by Nuclear Instrumentation Development (NID) and will be operationally tested in Building 771 by Recovery Operations, 771 Operational Technology Support, and Nuclear Instrumentation Development.

The original schedule for this operational testing has been delayed about one month due to delivery problems. A preliminary experimental plan has been written. That plan will be discussed and refined based on input from a meeting May 18, 1989. The experimental plan becomes critical only at the time of installation in Building 771 (pegpoint E, Figure 10), now estimated for July 21, 1989.

Pneumatic Transfer System for Liquid Samples

Contact: Joe Lucerna
MPSD

Development work is nearly complete. The engineering cost estimate on installation for 2-path system (line 31 to lab and line 42 to lab) is pending. The R&D cost estimate is $200K. Once the Engineering cost estimate is complete, PIP funding will be sought. The project milestones are shown in Figure 11.

The waste minimization benefit will be realized from reduction in bag cuts and the reduction in potential for contamination incidents, both of which generate TRU combustible waste. The estimated reduction is 600 cubic feet per year (80 drums).

Kelly Decontamination System

Contact: Bob Sheets
771 Ops Tech Supp

The Kelly Decontamination system is high-pressure heated water spray equipment which can be used to decontaminate floors in process areas instead of cleaning by hand with Kimwipes and towels. The waste minimization benefit is estimated to be a reduction of about 600 drums (4000 cubic feet) per year TRU combustible waste.

An engineering Scope and Estimate and preliminary engineering has been completed. A similar system has been purchased for installation in Building 444. Several issues must be resolved prior to making a final decision on installation in Building 771. Floor space is at a premium. The area identified in the preliminary design is also allocated for a new anion exchange system. The waste liquid generated will have to be processed in Building 774, and some question exists about the compatibility of the waste with Building 774 systems. Once these issues are resolved, PIP funding will be sought. Milestones will be available after the project is firmed up.

Size Reduction of Plastic Bottles at Line 43 A,B, & C (Crushing and Grinding)

Contact: Don Cox
771 Ops Tech Supp

An evaluation is being conducted on shredding or compacting equipment available to reduce volume of plastic bottles from Line 43. The waste minimization benefit would be to reduce waste generation from one drum per shift (one six-foot bag cut) to one two-foot bag cut per shift. (Figure 12)

An alternative may be shredding this waste in Building 776.

Prefiltration in Line 43 A,B, & C

Contact: Don Cox
771 Ops Tech Supp

Baffles and prefiltration have been designed for installation in Line 43 to extend the life of the glovebox exhaust filters. Maintenance installation is needed. There is no estimate available on the amount of filter waste reduction to be realized from this prefiltration system.

Incinerator Upgrade

Contact: Don Cox
771 Ops Tech Supp

An afterburner and off-gas scrubbing system will extend the plenum filter life. The Engineering cost is $700K. No funding is identified. There is no estimate on filter waste reduction available.

This is one of several upgrades proposed for the incinerator. No decision has been made regarding which of the upgrades to pursue. Once the desired course is identified, Engineering can proceed. Milestones will be reported after Engineering is complete.

Nitric Acid and Condensate Water Recycle

Contact: Recovery Discoveries EAT
Sandy Scharf and Joe Munzberg
771 Ops Tech Supp

This project has three parts to reduce the volume of liquids shipped to waste treatment. The first project recycles distillates from Line 11 evaporator.

Currently distillates are shipped to waste treatment. The Employee Action Team (EAT) proposal is to recycle the distillates to refill the evaporator when the bottoms are shipped. The use of distillates will reduce demand for .35N HNO3 and decreases the amount of waste shipped to waste treatment by an estimated 6100 gallons per year. The Engineering cost estimate is $51K. (Figure 12)

The second project recycles effluents from anion exchange. Currently when effluent tanks are filled they are sampled and shipped to waste treatment. The EAT proposal is to recycle the effluents to recondition the columns instead of new acid from chem makeup. Recycling reduces the volume of new acid and decreases the amount of waste sent to waste treatment (est. 23,000 gallons/year each). The project has been submitted to Engineering for a scope and estimate. (Figure 12)

The third project is the recycle of condensate. Currently steam condensate is collected in two holding tanks where it is sampled and shipped to waste treatment. The EAT suggestion recycles the steam condensate for seal liquid in the vacuum systems for Recovery Operations. The estimated reduction in liquid waste is 9,300 gallons/year. The project is awaiting nuclear safety approval. (Figure 12)

Gasket Replacement

Contact: Roger Lee
771 Ops Tech Supp

Teflon gaskets are being replaced with Gylon. Gylon doesn't "cold flow" like Teflon and provides a better seal and thereby reduces contamination incidents. The volume reduction of TRU waste from fewer contamination incidents has not been quantified. The installation of the new gasket material is ongoing.

There has also been a procedural change to inspect all valves prior to a process startup.

Regenerable In-Line Liquid Filter

Contact: Roger Lee
771 Ops Tech Supp

There is a study being conducted by Nuclear Filter Technology (NFT) to determine if an alternate filter can be developed to replace the polypropylene wound Fulflo filter. The polypropylene filter has limited service life since it loads up very easily and cannot be regenerated due to its construction. The purpose of this project is to develop a reusable Fulflo filter that can be generated to perform its function numerous times. The basic requirements for a regenerable filter are as follows:

A. Capable of being regenerated by backflushing, leaching, etc., for reuse.

B. Provide for filtering capability of one micron.

C. Be inert to filterable liquids used at Rocky Flats.

D. Cost effective with regards to initial cost, plutonium recovery cost, and waste treatment and disposal costs.

E. Provide a waste minimization benefit.

A Kevlar filter has been "cold" tested using zinc oxide particles of 1 to 5 micron size. The results are encouraging. The Kevlar filter exhibits a filtering efficiency of about 40% when challenged with 1 to 5 micron particles as compared to an efficiency of <5% for the polypropylene filter presently being used.

The next phase of this project calls for "in-line" testing of the new Kevlar filter. The Process Simulation Lab in Building 771, identified for this "in-line" testing, has not yet started up after the October 1988 building shutdown. Startup is not expected until July 1989.

Summary

This TRU Waste Management Plan establishes the basis for a program to reduce the volume and toxicity of TRU waste. A TRU waste data tracking and reporting system has been established. Segregation studies are underway. As further data are gathered and analyzed from the principal TRU waste generation areas, a clearer overview will result. Predictions and forecasts will become more accurate. Monthly reports will be generated with key issues discussed. Regular meetings with appropriate building personnel will be ongoing to strategize, emphasize, and evaluate all pertinent waste minimization options and approaches. Ultimately milestones and goals will be established and tracked for each building.

Two different generation rates (100 and 150 cubic yards per month) have been assumed in order to project on-hand inventories beyond September 1, 1990. These projections are indicated in Figure 13.

Additionally, based on recent data trends and best estimates, the six major buildings generating TRU-mixed waste contribute the following percentages of total plant TRU waste in FY 1989:

Building	Percent
371	2.4
559	5.1
707	22.8
771	23.5
776	10.9
777	12.5
	77.0%

Thus, these six buildings, in total, account for 77% of the total plant TRU waste generation. In order to maintain a rate of 150 (or 100) cubic yards per month, the six-building total would be 115 (or 77) cubic yards per month. This rate is then allocated accordingly as described below.

The remainder of TRU waste comes from Buildings 374, 774, 779, including the sludge from Building 374 and crates of stripout waste from various plutonium-contaminated areas.

Building	Allocation 150 yd^3/month	Allocation 100 yd^3/month	FY88 Rate (yd^3/month)	FY89 Rate (yd^3/month)
371	2.8	1.85	4.7	1.9
559	5.9	3.9	9.0	3.8
707	26.3	17.6	11.8	17.5
771	27.1	18.1	55.9	18.1
776	12.6	8.4	15.6	8.2
777	14.4	9.6	6.3	9.6

These allocations are for total TRU waste generation, <u>including stripouts</u>. The FY88 and FY89 rates <u>do not include stripout waste</u>. These allocations for Buildings 771 and 371 will seriously impact stripout and renovation schedules if these goals are to be met.

In order to accomplish the specified allocations, a plant team has been established with Ann Ficklin of Waste Operations as team leader.

Each of these building managers have made the commitment to initiate procedural and process changes to reduce TRU and TRU mixed waste to meet the goals established by the TRU Waste Reduction Team. The building drum teams will report to the TRU Waste Reduction Team on progress made toward reducing TRU waste, and assist, along with Non-Destructive Assay, the establishment of a system to identify drums of TRU waste which are free of any hazardous constituents.

Recovery and ReCap Program Department is establishing a team to evaluate each stripout and modification project within Building 771 to increase segregation of TRU waste from low level waste and also TRU waste from TRU mixed waste. The possibility of additional decontamination will be evaluated to reduce TRU waste to low level waste.

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KINZER, J. E.		
KIRBY, W. A.		
McNETT, J. F.		
MEYERS, G. W.		
ROECKER, J. H.		
SHANNON, W. M.		
SMITH, R. E.		
WESTON, W. F.	X	
WOZNIAK, B. D.		
YOUNG, E. R.		
BETCHER, D. H.		
CARNIVAL, G. J.		
FERRERA, D. W.		
HARMAN, L. K.		
HEBERT, J. L.		
HOEY, J. B.		
HOFFMAN, R. B.		
KLAMANN, R. L.		
KRIEG, D. M.	X	
LOUDENBURG, G. E.	X	
McKINLEY, K. B.	X	
NAIMON, E. R.	X	
NEWBY, R. L.		
TURNER, H. L.		
VELASQUEZ, R. N.		
Robledo, P.	X	
Hickle, D.	X	
Pickler, D.	X	
CORRES CONTROL	X	X
[illegible] C.	X	
McKinley, K.	X	
Weber, S.	X	
Hewitt, D.	X	

CLASSIFICATION	
UNCLASSIFIED	X
CONFIDENTIAL	
SECRET	

AUTH CLASSIFIER SIG
W F [signature]

DATE

IN REPLY TO LTR NO
0487-RF-89

REC #

LTR APPROVALS
WFW [signature]

ORIG & TYPIST INITIALS
ERN:evh

Rocky Flats Plant
Aerospace Operations
Rockwell International Corporation
P.O. Box 464
Golden, Colorado 80402-0464
(303) 966-7000
Contractor to U.S. Department of Energy

Rockwell International

MAR 2 1 1989

89-RF-0963

Albert E. Whiteman
Area Manager
DOE, RFAO

TRANSURANIC WASTE MANAGEMENT AND SHIPMENT PLAN

This information is for the attention of Tod Anderson.

Rockwell International agrees with the approach of shipping only ATMX railcars containing 4'x4'x7' boxes of transuranic (TRU) waste during the limited period approved for shipments to Idaho. The present inventory of TRU waste is more than adequate to meet this requirement.

The present inventory of TRU (mixed) waste totals 1257.5 cubic yards. Five additional shipments to Idaho of only boxes will reduce the inventory by 995.5 cubic yards. Assuming a generation rate of 150 cubic yards per month, it is projected that the total permitted storage capacity of 1601 cubic yards would be reached shortly after December 1, 1989. This projection is illustrated in the attached chart.

Indications are that shipping and storage limitations will persist for sometime yet. In order to maintain compliance with permitted capacities and to reduce TRU waste volumes, Rockwell has initiated several measures.

An evaluation of in-drum compaction of soft TRU waste was performed. Details of the analysis were provided to Tod Anderson earlier. Based on a 4:1 compaction ratio and on a throughput of 150 drums per month it was projected that twelve (12) cubic yards of additional storage capacity would be available monthly. Present and projected generation rates are significantly lower and would subsequently reduce the volume savings. Rockwell recommends not utilizing in-drum compaction at the present time, so as to avoid routine supplied-air operations in the Size Reduction Vault. Those wastes will instead be packaged directly into drums and staged in Building 664 (ready for off-site shipment). In the event that storage space becomes a concern at a later date, compaction of soft wastes in the Vault could be "campaigned" at that time in an efficient manner. This approach provides operational flexibility for both packaging and shipping.

The most important component of the TRU waste plan is waste minimization with emphasis at the point of generation. Bill Weston has established a program team to address specifically this issue. The team is being headed by Ann Ficklin of Waste Operations. Members of the team include representatives from Plutonium Recovery Operations, Process Technology Development, and Waste Operations. The primary focus will initially be on Building 771 operations and generation rates. Data are being collected on past volumes, present generation rates, and on processes as they are "restarted." There are also areas of concern in Building 707 that will be incorporated into the team plan. Tod Anderson has participated in the "kickoff" meeting and is planning to work closely with the team.

The above mentioned topics comprise an outline of the program plan to address TRU waste storage and shipment over the next year. Details and interim milestones are now being established. A report on recommendations for future actions will be provided to Bill Weston by June 1, 1989. At that time a more comprehensive program plan will be generated.

Rockwell has also expedited other related projects for TRU waste treatment/volume reduction. The Supercompactor is now an MIE project, resulting in some schedule acceleration. For microwave melting, approvals to proceed have already been granted by the Colorado Department of Health.

If there are questions on this response, please contact Ed Naimon on extension 7900.

Dominick J. Sanchini
President
Rocky Flats Plant
Aerospace Operations

Orig. and 3 cc - A. E. Whiteman

Attachment II

May 26, 1989

To: Ann Ficklin,
Waste Programs

From: Joe Molter,
771 Process Operations

Subject: 771 ACID / NON-ACID PROCESS LINES

Below is a breakdown, by room, of our Acid and Non-acid Process lines. Please call if you have any questions.

ROOM 114: Acid lines: 2,3,5,5A,9A,11,12,13,14,15,16,16A,18

ROOM 114: Non-Acid lines: 1,6,7,8,9,17,22

ROOM 146: Acid lines: MT-1,MT-2,MT-3,MT-4,MT-7

ROOM 146: Non-Acid lines: MT-5,MT-6

ROOM 149: Acid lines: 23,24,25,29,31,37(Incinerator), 40,42,43D,44

ROOM 149: Non-Acid lines: 26,33,38,43A,43B,43C,50

ROOM 174: Acid lines: 53,A-1,A-3,A-4,1097

ROOM 174: Non-Acid lines: A-2

cc: S. W. DeWitt

Table I

TRU WASTE GENERATION* - FY88 & 89

	Bldg. 371	Bldg. 559	Bldg. 707	Bldg. 771	Bldg. 776	Bldg. 777
March	5	35	30	126	41	26
April	6	39	27	146	113	27
May	6	28	46	225	80	51
June	18	30	20	166	67	11
July	34	27	29	269	23	8
August	29	33	29	278	28	2
September	23	40	117	216	44	34
TOTAL	121	232	298	1426	396	159
Average	17	33	43	204	57	23
October	12	38	79	158	33	118
November	4	0	23	37	8	9
December	6	5	55	61	17	21
January	5	13	61	21	10	29
February	13	24	128	58	60	36
March	2	4	32	50	42	26
April	5	17	68	75	43	5
Average	7	14	64	66	30	35

*Drums

Table II

SAS

OBS	DATE	WASTE	LINE29	LINE50	LINE43D	LINE5	LINE24	LINE14	LINE15	LINE17	LINE7
1	2/05	22	0	0	0	0	0	0	0	0	0
2	2/12	22	0	0	3	0	0	0	0	0	0
3	2/19	22	2	0	6	0	0	0	0	0	0
4	2/26	15	6	1	5	0	0	0	0	0	0
5	3/05	22	5	6	4	4	0	0	0	0	0
6	3/12	29	3	0	5	5	0	0	0	0	0
7	3/19	37	3	0	5	5	0	0	0	0	0
8	3/26	22	0	0	5	5	0	0	0	0	0
9	4/02	15	0	5	5	0	0	0	0	0	0
10	4/09	111	0	4	2	4	5	5	0	2	0
11	4/16	104	0	0	2	4	4	3	0	1	0
12	4/23	67	0	0	1	2	0	5	0	1	0
13	4/30	52	0	0	1	0	0	2	1	0	0
14	5/07	52	1	0	4	0	0	0	0	0	0
15	5/14	15	4	0	3	0	0	3	2	0	0
16	5/21	148	6	0	7	2	1	6	2	1	2

This table shows the weekly 771 generation in cubic feet and the number of days each week the individual lines were operating.

Table III

WASTE PACKAGE GENERATION

BUILDING 771

Line	Total Pkg	March 1 - May 31, 1989 Total Operating Days	Generation Rate (pkg/day)
Line 5	33	31	1.06
Line 7	12	2	6
Line 13/14	16	24	.7
Line 15/16	36	5	7.2
Line 17	24	5	4.8
Line 24	43	10	4.3
Line 29	17	22	.8
Line 42/43D	15	44	.3
Line 50	13	15	.9

Table IV

TRU WASTE PROFILE

Month	COMBUSTIBLES, METAL, GLASS		SLUDGE				ALL EXCEPT TRU SLUDGE		ALL TRU	
	Drums	Ft^3	% of TRU	Drums	Ft^3	% of TRU	Drums	Ft^3	Drums	Ft^3
JAN	128	947.2	74%	8	59.2	5%	165	1221	173	1280
FEB	254	1879.6	73%	16	118.4	5%	344	2546	360	2664
MARCH	117	865.8	49%	33	244.2	15%	198	1465	231	1709
APRIL	189	1398.6	70%	42	310.8	15%	229	1695	271	2005
TOTAL	688	5091	67%	99	733	10%	936	6927	1035	7658

Table V

TRU WASTE GENERATED FROM D&D WORK*

FY 1989-90

Building	Planned Stripouts FY 1989-90 (yd^3)
371	34
707	575
771	628
776	23
777	12
774	64
PRMP FY'91	189
PRMP FY'92	88

*Internal Letter 11/14/88 J. L. Hebert to C. P. Bader.

Figure 1a

TRU WASTE GENERATION
MARCH 1988 TO DECEMBER 1988

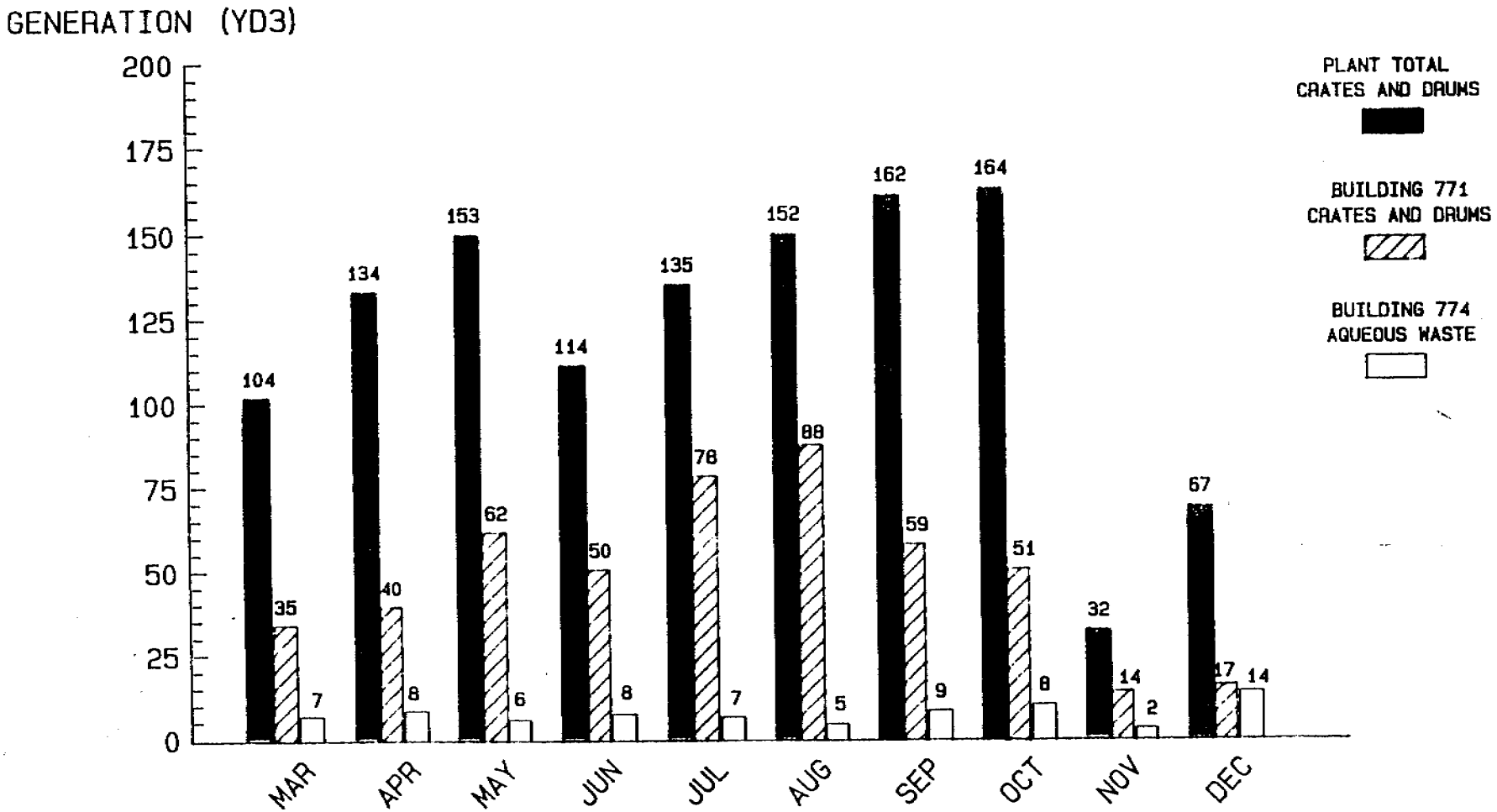


Figure 1b

TRU WASTE GENERATION
JANUARY 1989 TO APRIL 1989

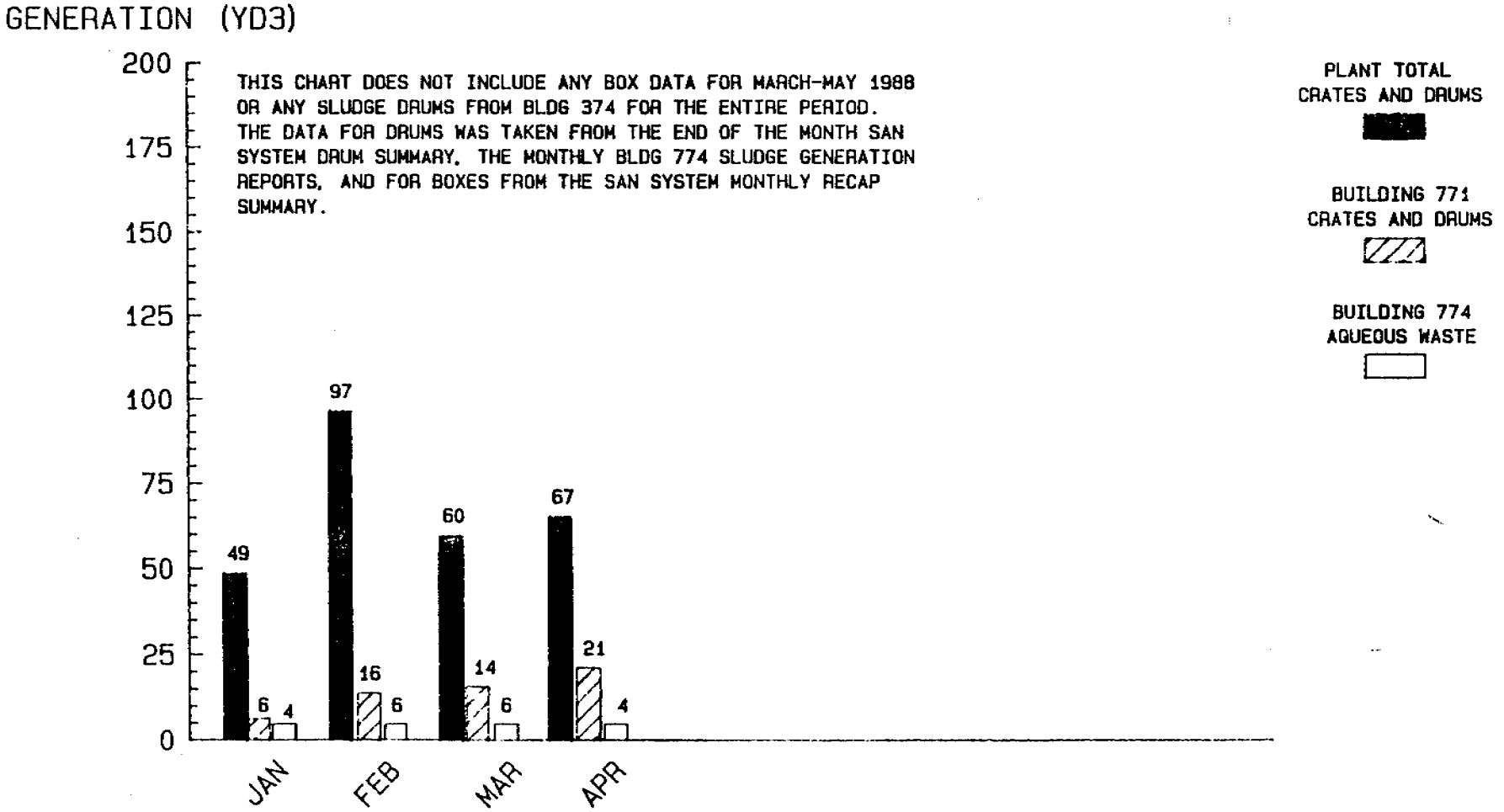
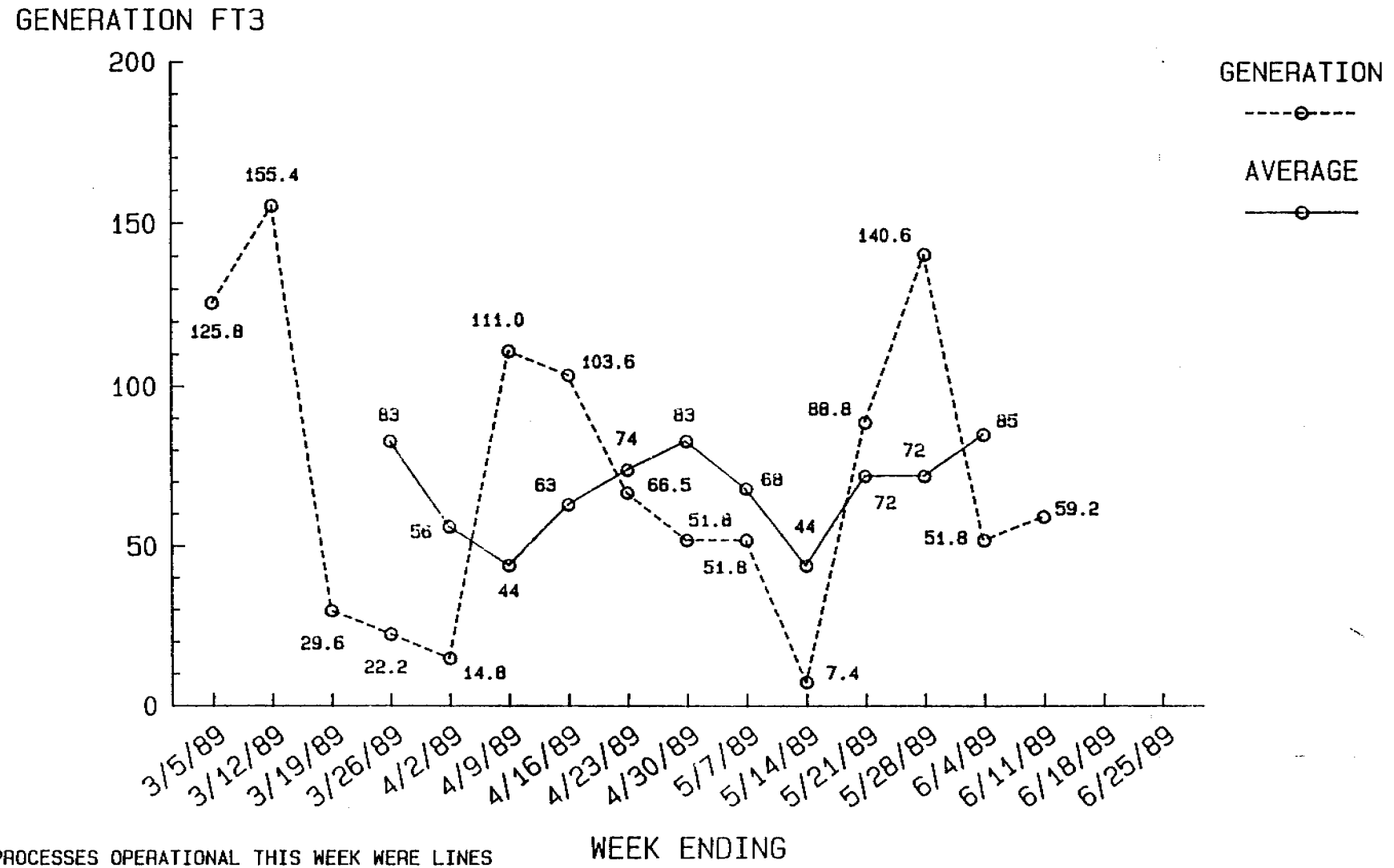


Figure 2

TRU-MIXED WASTE DRUM GENERATION
BUILDING 771
WEEK ENDING JUNE 11, 1989



PROCESSES OPERATIONAL THIS WEEK WERE LINES 5, 13/14, 15, 16, 24, 29, 42, 43D, AND 53.

Figure 3

TRU-MIXED SLUDGE GENERATION
BUILDING 774
WEEK ENDING JUNE 4, 1989

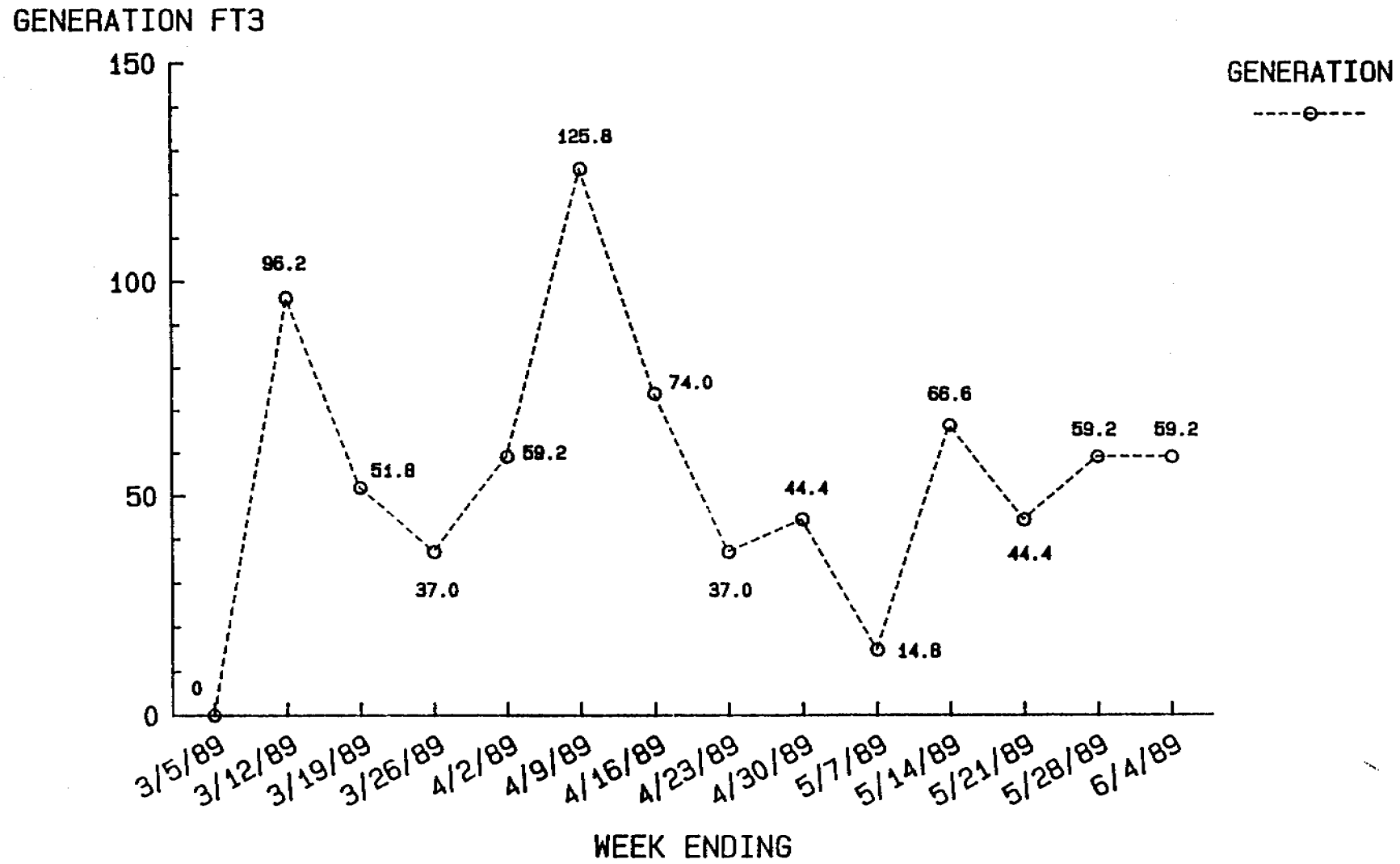
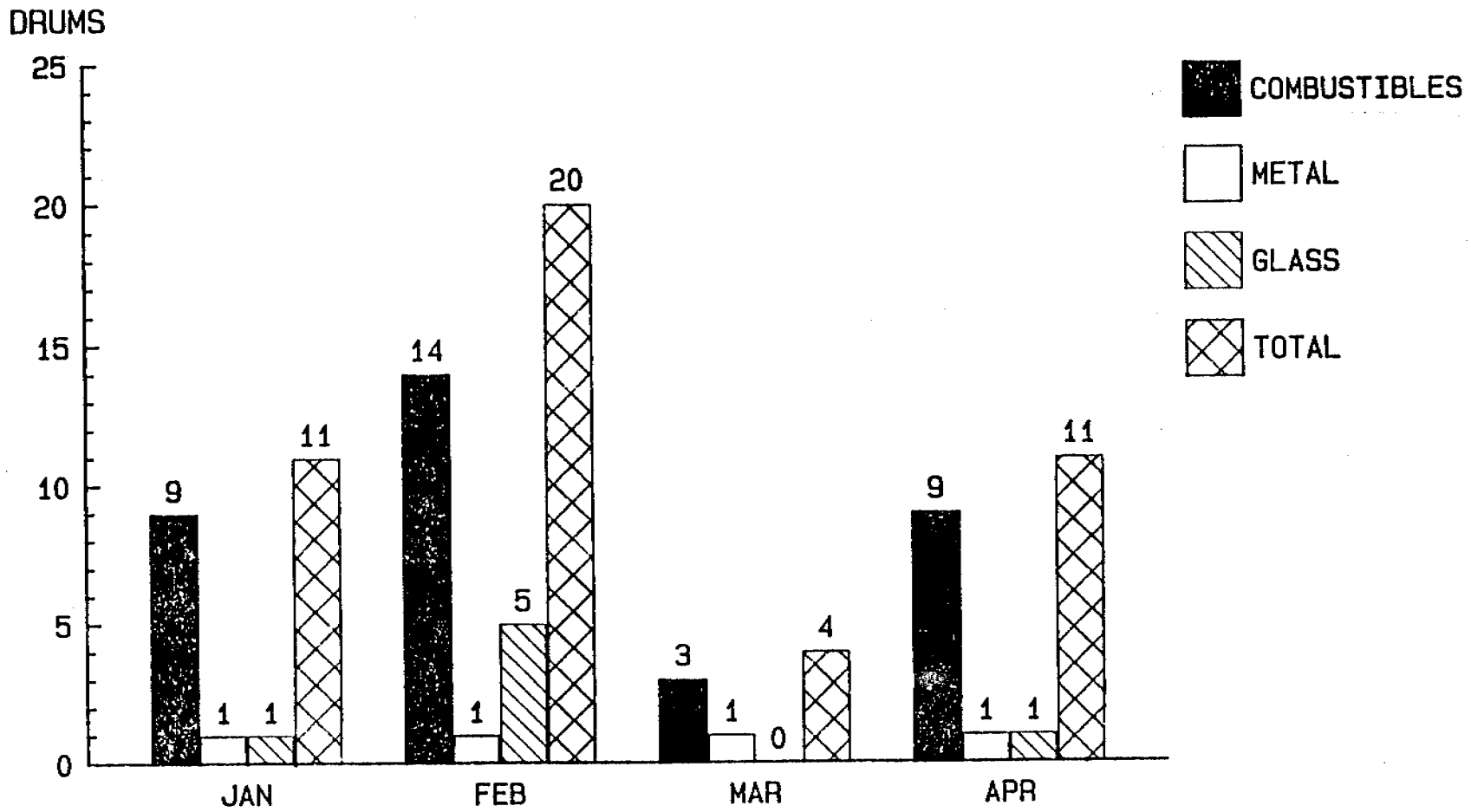


Figure 4

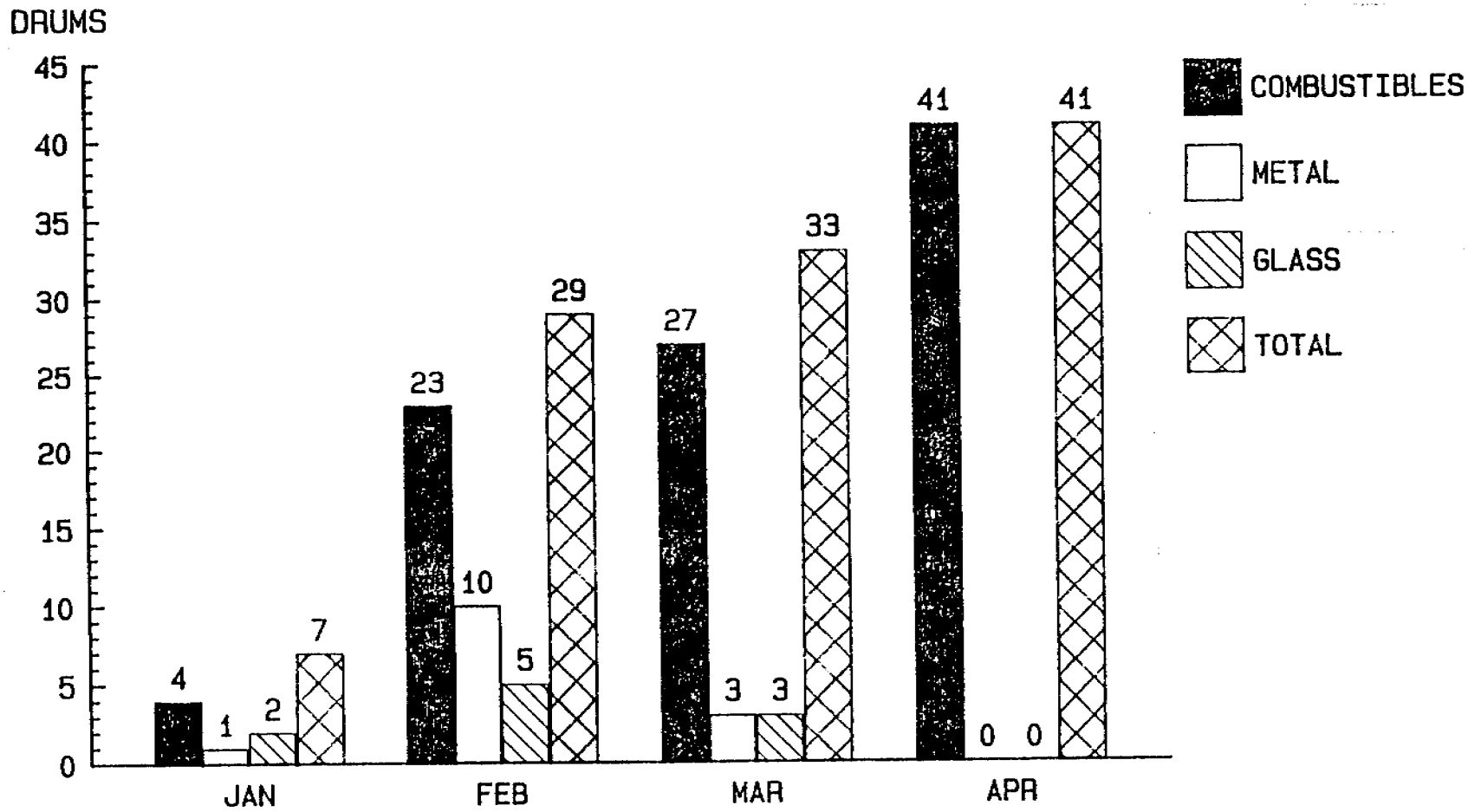
BUILDING 559



FY 88 MONTHLY AVG 33 DRUMS MONTHLY HIGH 40 DRUMS
FY 89 MONTHLY AVG 14 DRUMS MONTHLY HIGH 38 DRUMS

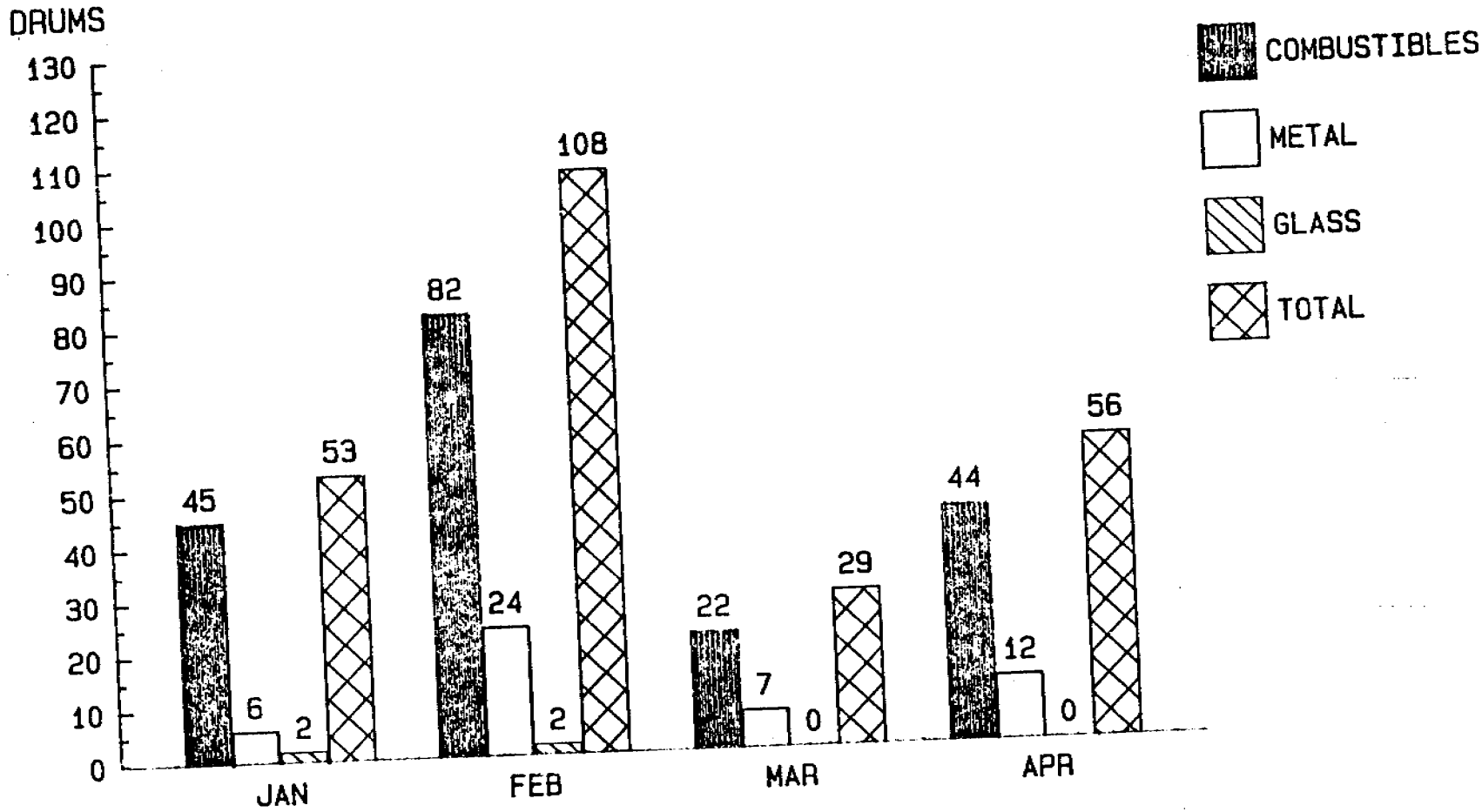
Figure 5

BUILDING 776



FY88 MONTHLY AVG 57 DRUMS MONTHLY HIGH 113 DRUMS
FY89 MONTHLY AVG 30 DRUMS MONTHLY HIGH 60 DRUMS

BUILDING 707

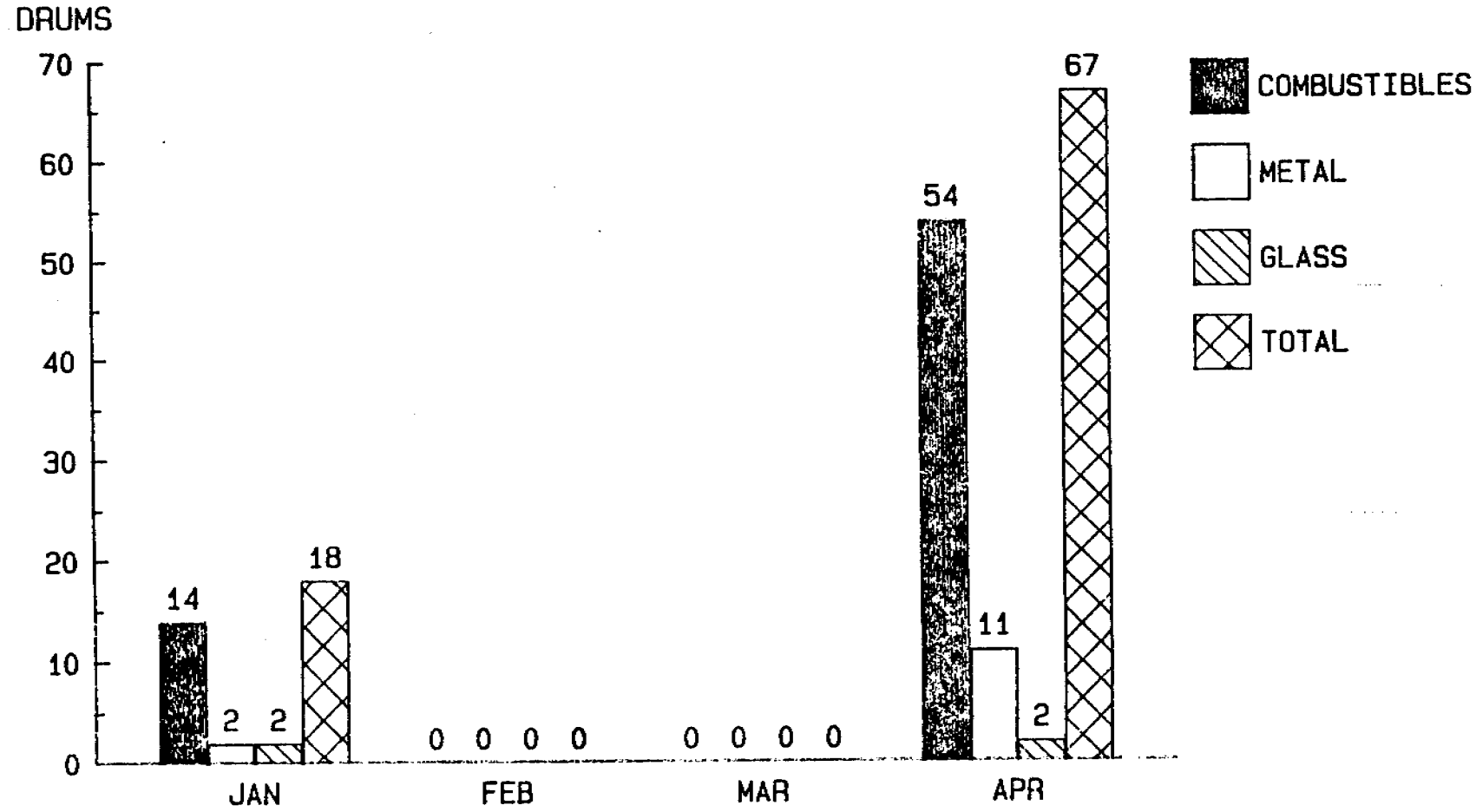


FY88 MONTHLY AVG 43 DRUMS MONTHLY HIGH 117 DRUMS
FY89 MONTHLY AVG 64 DRUMS MONTHLY HIGH 128 DRUMS

FY88 MONTHLY AVG 23 DRUMS MONTHLY HIGH 51 DRUMS
FY89 MONTHLY AVG 35 DRUMS MONTHLY HIGH 118 DRUMS

Figure 8

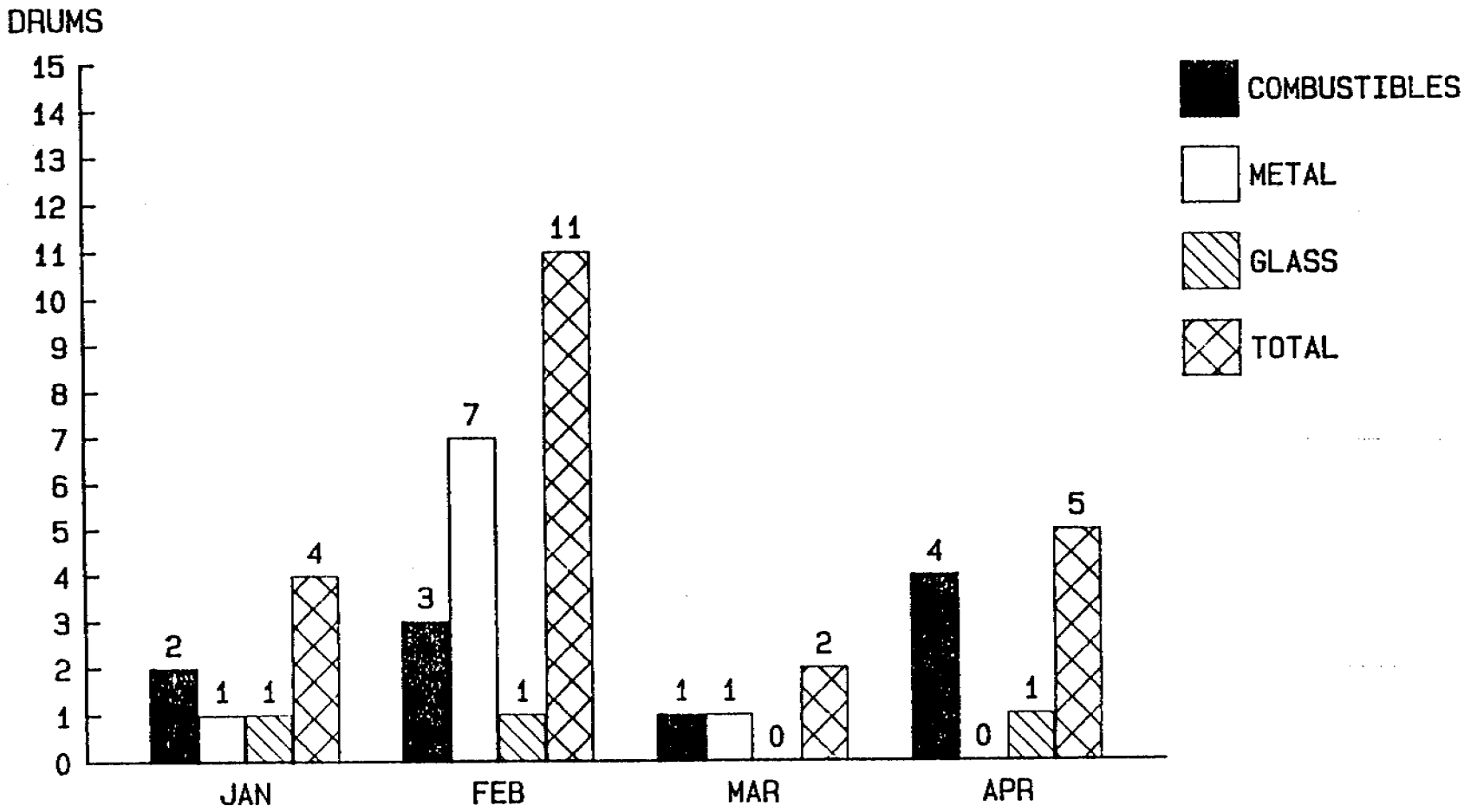
BUILDING 771



FY88 MONTHLY AVG 204 MONTHLY HIGH 278 DRUMS
FY89 MONTHLY AVG 66 MONTHLY HIGH 158 DRUMS

Figure 9

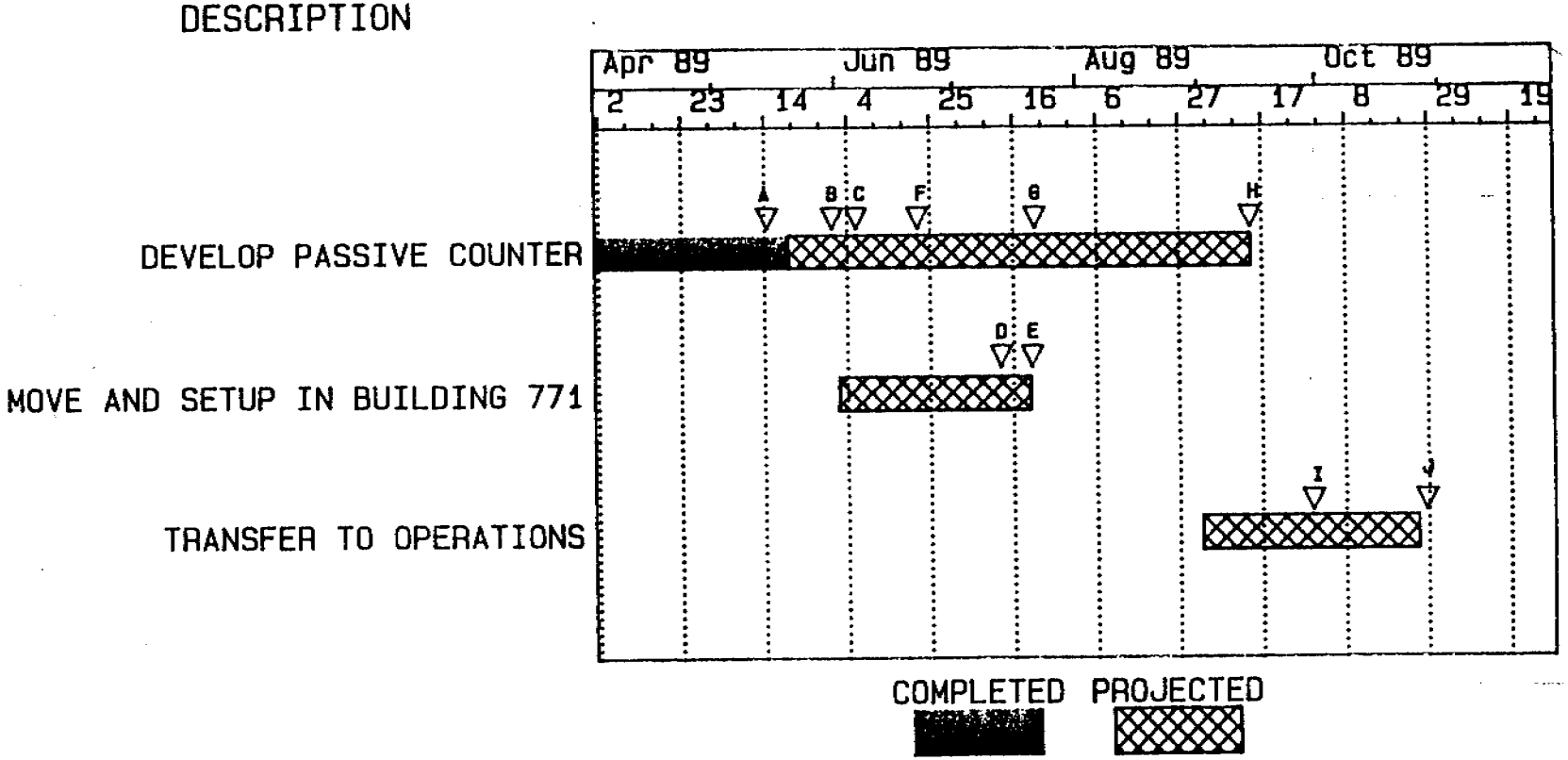
BUILDING 371



FY 88 MONTHLY AVG 17 DRUMS MONTHLY HIGH 34 DRUMS
FY 89 MONTHLY AVG 7 DRUMS MONTHLY HIGH 12 DRUMS

Figure 10

BUILDING 771
PASSIVE SORT AT SOURCE COUNTER
MAY 1989

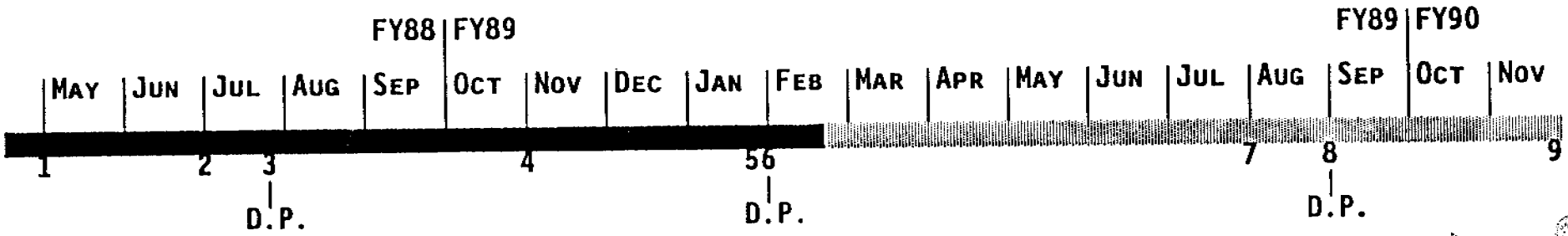


A. COMPLETE EXPERIMENTAL PLAN - 5/15
B. COINCIDENCE DEVELOPMENT (PRO APPROVALS, OSA COMPLETE) - 5/31
C. COMPLETE INSTALLING ANCILLARY EQUIPMENT - 6/7
D. PACK INSTRUMENT FOR MOVE TO BUILDING 771 - 7/14
E. MOVE TO BUILDING 771 COMPLETE - 7/21
F. LOSAC TYPE STANDARDS AVAILABLE - 6/23
G. COMPLETE SOFTWARE/BEGIN CALIBRATION LOSAC STANDARDS - 7/28
H. SYSTEM DOCUMENTED - 9/15
I. TRAINING MANUAL COMPLETE/BEGIN TRAINING OPERATORS - 9/30
J. TRANSFER TO OPERATIONS - 10/27

Figure 11

MILESTONE SCHEDULE FOR PNEUMATIC SAMPLE TRANSFER SYSTEM

FEBRUARY 24, 1989



1. PROJECT IDENTIFIED AND INITIAL CONTACTS MADE.
2. PROPOSAL WRITTEN.
3. APPROVAL TO BEGIN DEVELOPMENT.
4. PROTOTYPE DESIGN COMPLETED.
5. PROTOTYPE DEMONSTRATION SUCCESSFUL.
6. APPROVAL TO CONTINUE DEVELOPMENT.
7. TWO-PATH DEMONSTRATION W/ CONTROLS COMPLETE.
8. DECISION POINT (D.P.)
9. FINAL TWO-PATH SYSTEM READY FOR INSTALLATION.

ESTIMATED ENGINEERING TIME TO COMPLETE INSTALLATION PACKAGE FOR TWO-PATH SYSTEM.....6 MO. */**

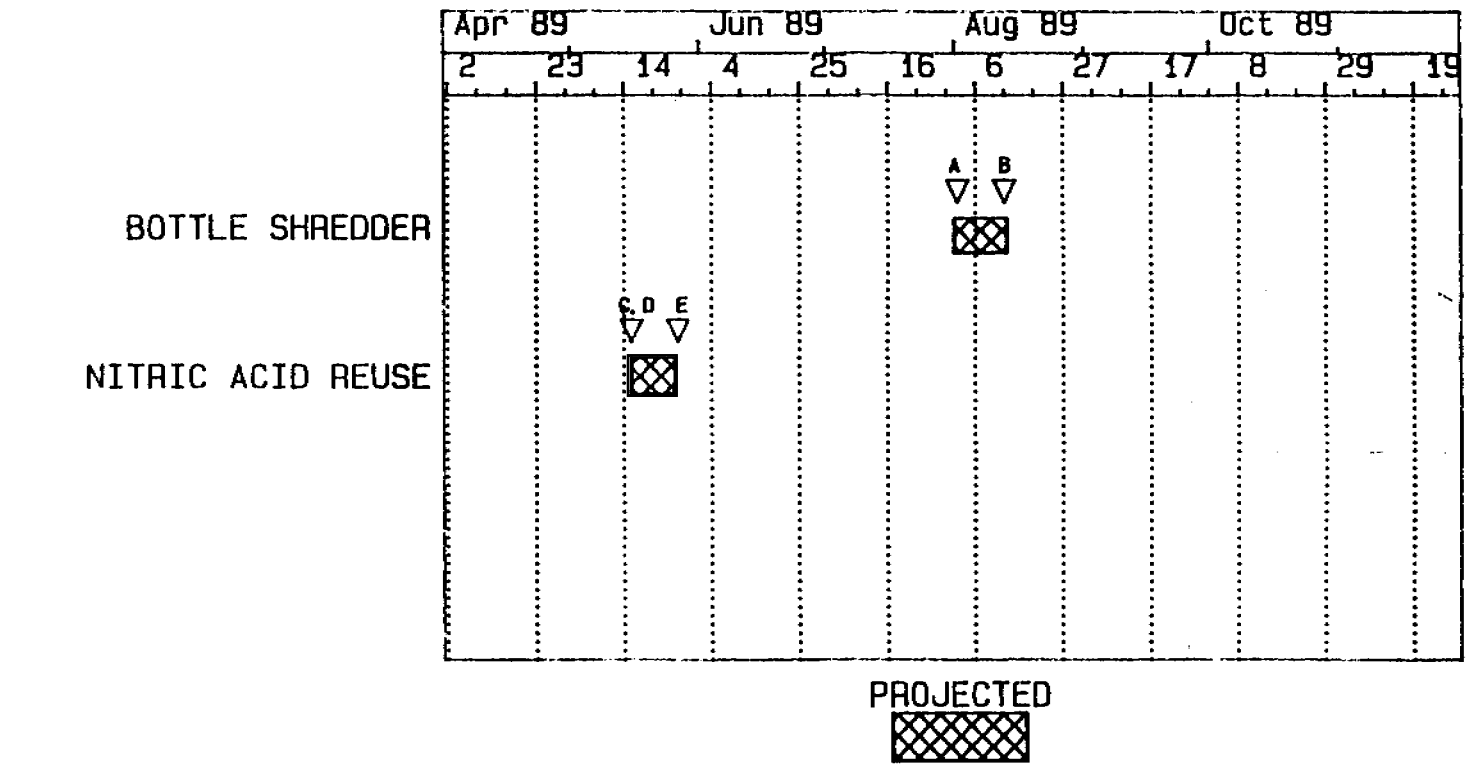
ESTIMATED INSTALLATION TIME FOR TWO-PATH SYSTEM.....4 MO. *

* ASSUMING ADEQUATE PRIORITIES.
** INSTALLATION PACKAGE CAN BE STARTED SEPTEMBER 1, 1989.

NOTE: THE ABOVE SCHEDULE APPLIES TO A TWO-PATH SYSTEM CONNECTING LINES 31 AND 42 WITH THE ANALYTICAL LABORATORY. THIS SYSTEM CAN BE EXPANDED AT A LATER DATE BY ADDING LINES 12 AND 13 FOR A COMPLETE FOUR-PATH SYSTEM. NO FURTHER DEVELOPMENT TIME WILL BE REQUIRED, AND INSTALLATION EFFORTS ARE AGAIN ESTIMATED AT ANOTHER 6 MONTHS ENGINEERING AND 4 MONTHS FABRICATION.

Figure 12

BUILDING 771
PROJECTS
MAY 1989



A. SURVEY AVAILABLE EQUIPMENT 8/1/89
B. SUBMIT EJO 8/15/89
C. RECYCLE LINE 11 DISTILLATE 5/18/89
D. RECYCLE EFFLUENT TO LINE 5 5/18/89
E. RECYCLE STEAM CONDENSATE 5/26/89

Figure 13

ROCKWELL INTERNATIONAL, ROCKY FLATS PLANT
TRU MIXED WASTE GENERATION PROJECTION